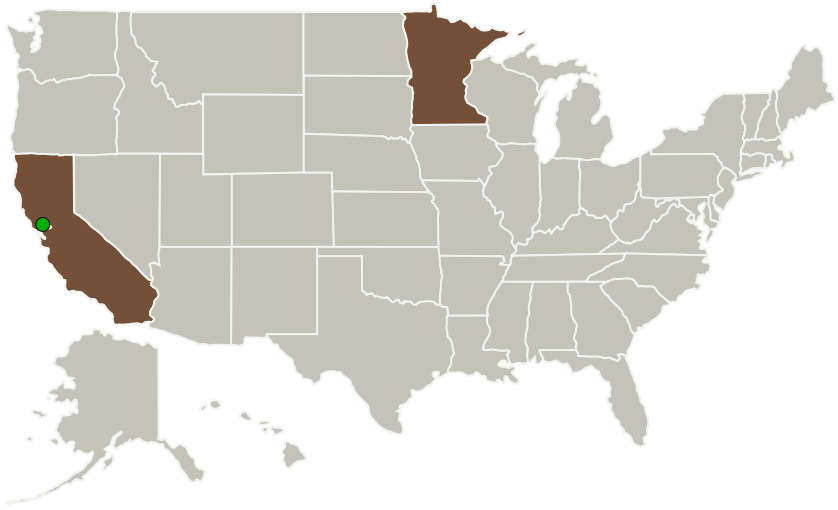
Brain Machine Interfaces for Robotic Control in Space Applications, Phase I

Completed Technology Project (2012 - 2012)

Project Introduction

This SBIR will study the application of a brain machine interface (BMI) to enable crew to remotely operate and monitor robots from inside a flight vehicle, habitat and/or during an extra-vehicular activity (EVA). The goal is to improve robot operator productivity, situational awareness, and effectiveness. With the application of a BMI technology an astronaut in an extravehicular suit could great improve their capability of working with rover, arm and free flying robots. The use of BMI is being studied extensively worldwide for its application in aiding people who are paralyzed or for persons missing limbs to control prosthetics. This project will study ways to apply this research to robotic control in space applications. System architectures will be defined for both the EVA and IVA crew member. The goal for phase II will be to demonstrate BMI in a space robotic control application. This research also has the benefit of supporting technology of use by those who are paralyzed or who have prosthetic limbs.

Primary U.S. Work Locations and Key Partners



Brain Machine Interfaces for Robotic Control in Space Applications, Phase I

Table of Contents

Brain Machine Interfaces for Robotic Control in Space Applications, Phase I

Completed Technology Project (2012 - 2012)

Organizations Performing Work	Role	Type	Location
Advanced Medical Electronics Corporation	Lead Organization	Industry	Maple Grove, Minnesota
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Minnesota

Project Transitions

February 2012: Project Start

August 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138022)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Advanced Medical Electronics Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

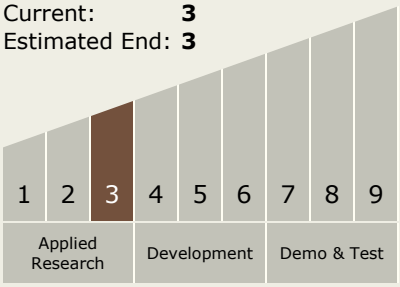
Carlos Torrez

Principal Investigator:

Gary Havey

Technology Maturity (TRL)

Start: **3**
Current: **3**
Estimated End: **3**



Brain Machine Interfaces for Robotic Control in Space Applications, Phase I

Completed Technology Project (2012 - 2012)

Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.4 Human-Robot Interaction
    - TX04.4.1 Multi-Modal and Proximate Interaction

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System